WHAT IS CLAIMED IS:

1. A biocompatible membrane, the biocompatible membrane comprising a silicone composition comprising a hydrophile covalently incorporated therein, wherein the biocompatible membrane controls transport of an analyte through the membrane.

2. The biocompatible membrane of claim 1, wherein the silicone composition comprises a hydrophile grafted therein.

3. The biocompatible membrane of claim 1, comprising two or more domains.

4. The biocompatible membrane of claim 1, comprising a cell disruptive domain, wherein the cell disruptive domain supports tissue ingrowth and interferes with barrier-cell layer formation.

5. The biocompatible membrane of claim 4, wherein the cell disruptive domain comprises the silicone composition.

6. The biocompatible membrane of claim 5, wherein the silicone composition comprises from about 1 wt. % to about 20 wt. % of the hydrophile.

7. The biocompatible membrane of claim 1, comprising a cell impermeable domain, wherein the cell impermeable domain is resistant to cellular attachment and is impermeable to cells and cell processes.

8. The biocompatible membrane of claim 7, wherein the cell impermeable domain comprises the silicone composition.

9. The biocompatible membrane of claim 8, wherein the silicone composition comprises from about 1 wt. % to about 20 wt. % of the hydrophile.

10. The biocompatible membrane of claim 1, comprising a resistance domain, wherein the resistance domain controls a flux of oxygen and glucose through the membrane.

11. The biocompatible membrane of claim 10, wherein the resistance domain comprises the silicone composition.

12. The biocompatible membrane of claim 11, wherein the silicone composition comprises from about 1 wt. % to about 20 wt. % of the hydrophile.

13. The biocompatible membrane of claim 1, comprising an enzyme domain, wherein the enzyme domain comprises an immobilized enzyme.

14. The biocompatible membrane of claim 13, wherein the immobilized enzyme comprises glucose oxidase.

15. The biocompatible membrane of claim 13, wherein the enzyme domain comprises the silicone composition.

16. The biocompatible membrane of claim 15, wherein the silicone composition comprises from about 1 wt. % to about 50 wt. % of the hydrophile.

17. The biocompatible membrane of claim 1, comprising an interference domain, wherein the interference domain substantially prevents the penetration of one or more interferents into an electrolyte phase adjacent to an electrochemically reactive surface.

18. The biocompatible membrane of claim 17, wherein the interference domain comprises an ionic component.

19. The biocompatible membrane of claim 17, wherein the interference domain comprises the silicone composition.

20. The biocompatible membrane of claim 19, wherein the silicone composition comprises from about 1 wt. % to about 10 wt. % of the hydrophile.

21. The biocompatible membrane of claim 1, comprising an electrolyte domain, wherein the electrolyte domain comprises a semipermeable coating that maintains hydrophilicity at an electrochemically reactive surface.

22. The biocompatible membrane of claim 21, wherein the electrolyte domain comprises the silicone composition.

23. The biocompatible membrane of claim 22, wherein the silicone composition comprises from about 1 wt. % to about 50 wt. % of the hydrophile.

24. An implantable biosensor comprising the bicompatible membrane of claim 1.

25. An implantable drug delivery device comprising the bicompatible membrane of claim 1.

26. An implantable cell implantation device comprising the bicompatible membrane of claim 1.

27. A polymeric material, wherein the polymeric material comprises a repeating unit derived from a cyclosiloxane monomer substituted with a hydrophile, a repeating unit

derived from an unsubstituted cyclosiloxane monomer, and a terminating unit derived from a polysiloxane monomer terminated with a telechelic group.

28. The polymeric material of claim 27, wherein the hydrophile comprises diethyleneglycol.

29. The polymeric material of claim 27, wherein the hydrophile comprises triethyleneglycol.

30. The polymeric material of claim 27, wherein the hydrophile comprises tetraethyleneglycol.

31. The polymeric material of claim 27, wherein the hydrophile comprises polyethyleneglycol.

32. The polymeric material of claim 31, wherein the polyethyleneglycol comprises from about 1 to about 30 repeating units.

33. The polymeric material of claim 27, wherein the unsubstituted cyclosiloxane monomer comprises octamethylcyclotetrasiloxane.

34. The polymeric material of claim 27, wherein the unsubstituted cyclosiloxane monomer comprises hexamethlcyclotrisiloxane.

35. The polymeric material of claim 27, wherein the unsubstituted cyclosiloxane monomer comprises octamethlcyclotrisiloxane.

36. The polymeric material of Claim 27, wherein the polysiloxane monomer terminated with a telechelic group comprises a vinyldimethylsilyl-terminated polysiloxane.

37. The polymeric material of Claim 27, wherein the polysiloxane monomer terminated with a telechelic group comprises a polydimethylsiloxane monomer terminated with a telechelic group.

38. The polymeric material of Claim 27, wherein the polysiloxane monomer terminated with a telechelic group comprises divinyltetramethyl disiloxane.

39. The polymeric material of Claim 38, wherein the divinyltetramethyl disiloxane comprises from about 1 to about 100 dimethylsiloxane units.

40. The polymeric material of Claim 27, comprising about 2000 or more dimethylsiloxane repeating units.

41. The polymeric material of Claim 27, comprising about 50 or more polyethylene glycol-substituted dimethylsiloxane repeating units.

42. The polymeric material of Claim 27, wherein a number ratio of repeating units derived from an unsubstituted cyclosiloxane monomer to repeating units derived from a cyclosiloxane monomer substituted with a hydrophile is from about 80:1 to about 20:1.

43. The polymeric material of Claim 27, wherein a number ratio of repeating units derived from an unsubstituted cyclosiloxane monomer to repeating units derived from a cyclosiloxane monomer substituted with a hydrophile is from about 50:1 to about 30:1.

44. The polymeric material of Claim 27, wherein a number ratio of repeating units derived from an unsubstituted cyclosiloxane monomer to repeating units derived from a cyclosiloxane monomer substituted with a hydrophile is about 40:1.

45. The polymeric material of Claim 28, wherein a number ratio of repeating units derived from an unsubstituted cyclosiloxane monomer to repeating units derived from a cyclosiloxane monomer substituted with diethylene glycol is from about 80:1 to about 20:1.

46. The polymeric material of Claim 28, wherein a number ratio of repeating units derived from an unsubstituted cyclosiloxane monomer to repeating units derived from a cyclosiloxane monomer substituted with diethylene glycol is from about 50:1 to about 30:1.

47. The polymeric material of Claim 28, wherein a number ratio of repeating units derived from an unsubstituted cyclosiloxane monomer to repeating units derived from a cyclosiloxane monomer substituted with diethylene glycol is about 40:1.

48. The polymeric material of Claim 29, wherein a number ratio of repeating units derived from an unsubstituted cyclosiloxane monomer to repeating units derived from a cyclosiloxane monomer substituted with triethylene glycol is from about 80:1 to about 20:1.

49. The polymeric material of Claim 29, wherein a number ratio of repeating units derived from an unsubstituted cyclosiloxane monomer to repeating units derived from a cyclosiloxane monomer substituted with triethylene glycol is from about 50:1 to about 30:1.

50. The polymeric material of Claim 29, wherein a number ratio of repeating units derived from an unsubstituted cyclosiloxane monomer to repeating units derived from a cyclosiloxane monomer substituted with triethylene glycol is about 40:1.

51. The polymeric material of Claim 30, wherein a number ratio of repeating units derived from an unsubstituted cyclosiloxane monomer to repeating units derived from a cyclosiloxane monomer substituted with tetraethylene glycol is from about 80:1 to about 20:1.

52. The polymeric material of Claim 30, wherein a number ratio of repeating units derived from an unsubstituted cyclosiloxane monomer to repeating units derived from a cyclosiloxane monomer substituted with tetraethylene glycol is from about 50:1 to about 30:1.

53. The polymeric material of Claim 30, wherein a number ratio of repeating units derived from an unsubstituted cyclosiloxane monomer to repeating units derived from a cyclosiloxane monomer substituted with tetraethylene glycol is about 40:1.

54. The polymeric material of Claim 31, wherein a number ratio of repeating units derived from an unsubstituted cyclosiloxane monomer to repeating units derived from a cyclosiloxane monomer substituted with polyethylene glycol is from about 80:1 to about 20:1.

55. The polymeric material of Claim 31, wherein a number ratio of repeating units derived from an unsubstituted cyclosiloxane monomer to repeating units derived from a cyclosiloxane monomer substituted with polyethylene glycol is from about 50:1 to about 30:1.

56. The polymeric material of Claim 31, wherein a number ratio of repeating units derived from an unsubstituted cyclosiloxane monomer to repeating units derived from a cyclosiloxane monomer substituted with polyethylene glycol is about 40:1.

57. A biocompatible membrane comprising a polymeric material formed from a cyclosiloxane monomer substituted with a hydrophile, an unsubstituted cyclosiloxane monomer, and a polysiloxane monomer terminated with a telechelic group.

58. A polymeric material, wherein the polymeric material comprises a repeating unit derived from a polyethyleneglycol-substituted octamethylcyclotetrasiloxane monomer, a repeating unit derived from an unsubstituted octamethylcyclotetrasiloxane monomer, and a repeating unit derived from a vinyldimethylsilyl-terminated polydimethylsiloxane monomer.

59. The polymeric material of Claim 58, wherein the vinyldimethylsilyl-terminated polydimethylsiloxane monomer contributes about 100 or more dimethylsiloxane repeating units to the polymeric material.

60. The polymeric material of Claim 58, comprising about 2000 or more dimethylsiloxane repeating units.

61. The polymeric material of Claim 58, comprising about 50 or more polyethylene glycol-substituted dimethylsiloxane repeating units.

62. The polymeric material of Claim 58, wherein a number ratio of dimethylsiloxane repeating units to polyethylene glycol-substituted dimethylsiloxane repeating units is from about 80:1 to about 20:1.

63. The polymeric material of Claim 58, wherein a number ratio of dimethylsiloxane repeating units to polyethylene glycol-substituted dimethylsiloxane repeating units is from about 50:1 to about 30:1.

64. The polymeric material of Claim 58, wherein a number ratio of dimethylsiloxane repeating units to polyethylene glycol-substituted dimethylsiloxane repeating units is about 40:1.

65. A process for preparing a polymeric material for use in fabricating a biocompatible membrane, the process comprising the steps of:

providing a first monomer comprising a cyclosiloxane monomer substituted with a hydrophile;

providing a second monomer comprising an unsubstituted cyclosiloxane monomer;

providing a third monomer comprising a polysiloxane monomer terminated with a telechelic group;

providing a polymerization catalyst; and

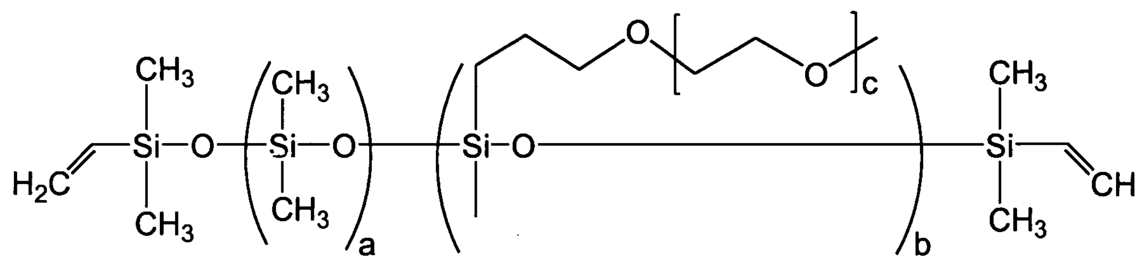
polymerizing the first monomer, the second monomer, and the third monomer, whereby a polymeric material suitable for use in fabricating a membrane is obtained.

66. The process of claim 65, wherein a molar ratio of the second monomer to the first monomer is from about 80:1 to about 20:1.

67. The process of claim 65, wherein a molar ratio of the second monomer to the first monomer is from about is from about 50:1 to about 30:1.

68. The process of claim 65, wherein a molar ratio of the second monomer to the first monomer is about 40:1.

69. A polymeric material, the material comprising a copolymer of Formula A:



wherein:

a is an integer of from 100 to 10000;

b is an integer of from 1 to 1000; and

c is an integer of from 1 to 30.

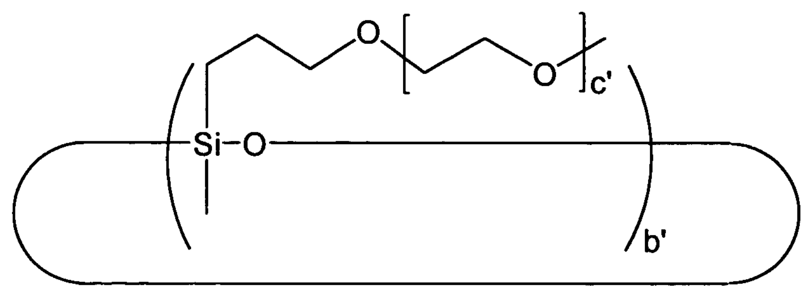
70. The polymeric material of Claim 69, wherein a ratio of b to a is from about 1:200 to about 1:1.

71. The polymeric material of Claim 69, wherein a ratio of b to a is from about 1:200 to about 1:2.

72. The polymeric material of Claim 69, wherein a ratio of b to a is from about 1:200 to about 1:10.

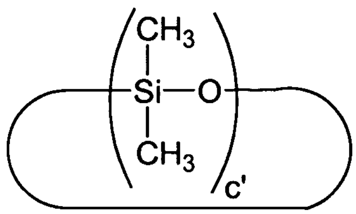
73. A process for preparing a polymeric material for use in fabricating a biocompatible membrane, the process comprising the steps of:

providing a first monomer comprising the Formula B:



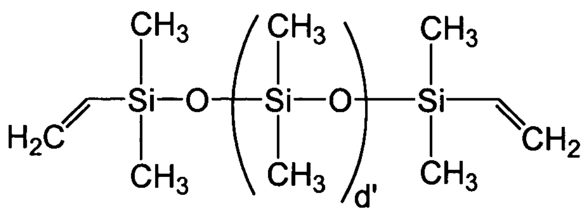
wherein b' is an integer of from 3 to 6 and c' is an integer of from 1 to 30;

providing a second monomer comprising the Formula C:



wherein c’ is an integer of from 3 to 6;

providing a third monomer comprising the Formula D;



wherein d’ is an integer of from 0 to about 100;

providing a polymerization catalyst; and

polymerizing the first monomer, the second monomer, and the third monomer, whereby a polymeric material suitable for use in fabricating a membrane is obtained.

74. The process of claim 73, wherein a molar ratio of the second monomer to the first monomer is from about 80:1 to about 20:1.

75. The process of claim 73, wherein a molar ratio of the second monomer to the first monomer is from about is from about 50:1 to about 30:1.

76. The process of claim 73, wherein a molar ratio of the second monomer to the first monomer is about 40:1.

77. A polymeric material, wherein the polymeric material comprises a repeating unit derived from a hydrophilically-substituted cyclosiloxane monomer, a repeating unit derived from an unsubstituted cyclosiloxane monomer, and a terminating unit derived from a telechelic siloxane monomer.

78. The polymeric material of claim 77, wherein the hydrophilically-substituted cyclosiloxane monomer comprises a diethyleneglycol group.

79. The polymeric material of claim 77, wherein the hydrophilically-substituted cyclosiloxane monomer comprises a triethyleneglycol group.

80. The polymeric material of claim 77, wherein the hydrophilically-substituted cyclosiloxane monomer comprises a tetraethyleneglycol group.

81. The polymeric material of claim 77, wherein the hydrophilically-substituted cyclosiloxane monomer comprises a polyethyleneglycol group.

82. The polymeric material of claim 81, wherein the polyethyleneglycol group comprises an average molecular weight of from about 200 to about 1200.

83. The polymeric material of claim 77, wherein the hydrophilically-substituted cyclosiloxane monomer comprises a ring size of from about 6 to about 12 atoms.

84. The polymeric material of claim 77, wherein the unsubstituted cyclosiloxane monomer comprises hexamethylcyclotrisiloxane.

85. The polymeric material of claim 77, wherein the unsubstituted cyclosiloxane monomer comprises octamethlcyclotetrasiloxane.

86. The polymeric material of Claim 77, wherein the telechelic siloxane monomer comprises divinyltetramethyldisiloxane.

87. The polymeric material of Claim 77, wherein the telechelic siloxane monomer comprises vinyldimethylsilyl terminated polydimethylsiloxane.

88. The polymeric material of Claim 87, wherein the vinyldimethylsilyl terminated polydimethylsiloxane comprises an average molecular weight of from about 200 to 20,000.

89. The polymeric material of Claim 77, comprising about 100 or more dimethylsiloxane repeating units.

90. The polymeric material of Claim 77, comprising from about 100 to about 10000 dimethylsiloxane repeating units.

91. The polymeric material of Claim 77, comprising one or more hydrophilically-substituted repeating units.

92. The polymeric material of Claim 77, comprising from about 1 to about 10000 hydrophilically-substituted repeating units.

93. The polymeric material of Claim 77, comprising one or more polyethylene glycol-substituted repeating units.

94. The polymeric material of Claim 77, comprising from about 1 to about 10000 polyethylene glycol-substituted repeating units.

95. The polymeric material of claim 94, wherein the polyethyleneglycol comprises an average molecular weight of from about 200 to about 1200.

96. The polymeric material of Claim 77, wherein a number ratio of hydrophilically-substituted siloxane repeating units to unsubstituted siloxane repeating units is from about 1:200 to about 1:1.

97. The polymeric material of Claim 77, wherein a number ratio of hydrophilically-substituted siloxane repeating units to unsubstituted siloxane repeating units is from about 1:200 to about 1:2.

98. The polymeric material of Claim 77, wherein a number ratio of hydrophilically-substituted siloxane repeating units to unsubstituted siloxane repeating units is from about 1:200 to about 1:10.

99. The polymeric material of Claim 77, comprising one or more ethylene glycol-substituted repeating units.

100. The polymeric material of Claim 77, comprising one or more diethylene glycol-substituted repeating units.

101. The polymeric material of Claim 77, comprising one or more triethylene glycol-substituted repeating units.

102. The polymeric material of Claim 77, comprising one or more tetrathyleneglycol-substituted repeating units.

103. A method for preparing a biocompatible membrane, the method comprising:

providing a polymeric material, wherein the polymeric material comprises a repeating unit derived from a cyclosiloxane monomer substituted with a hydrophile, a repeating unit derived from an unsubstituted cyclosiloxane monomer, and a terminating unit derived from a polysiloxane monomer terminated with a telechelic group;

mixing the polymeric material with a diluent, whereby a solution or dispersion is obtained;

forming the solution or dispersion into a film; and

curing the film, wherein the cured film comprises a biocompatible membrane.

104. The method of claim 103, wherein the step of forming the solution or dispersion into a film comprises spin coating.

105. The method of claim 103, wherein the step of forming the solution or dispersion into a film comprises dip coating.

106. The method of claim 103, wherein the step of forming the solution or dispersion into a film comprises casting.

107. The method of claim 103, wherein the step of curing comprises curing at elevated temperature.

108. The method of claim 103, further comprising the step of mixing the polymeric material with a filler.

109. The method of claim 103, wherein the filler is selected from the group consisting of fumed silica, aluminum oxide, carbon black, titanium dioxide, calcium carbonate, fiberglass, ceramics, mica, microspheres, carbon fibers, kaolin, clay, alumina trihydrate, wollastonite, talc, pyrophyllite, barium sulfate, antimony oxide, magnesium hydroxide, calcium sulfate, feldspar, nepheline syenite, metallic particles, magnetic particles, magnetic fibers, chitin, wood flour, cotton flock, jute, sisal, synthetic silicates, fly ash, diatomaceous earth, bentonite, iron oxide, nylon fibers, polyethylene terephthalate fibers, poly(vinyl alcohol) fibers, poly(vinyl chloride) fibers, and acrylonitrile fibers.

110. The method of Claim 103, wherein the cyclosiloxane monomer substituted with a hydrophile comprises a diethyleneglycol group.

111. The method of Claim 103, wherein the cyclosiloxane monomer substituted with a hydrophile comprises a triethyleneglycol group.

112. The method of Claim 103, wherein the cyclosiloxane monomer substituted with a hydrophile comprises a tetraethyleneglycol group.

113. The method of Claim 103, wherein the cyclosiloxane monomer substituted with a hydrophile comprises a polyethyleneglycol group.

114. The polymeric material of claim 81, wherein the polyethyleneglycol comprises an average molecular weight of from about 200 to about 1200.

115. The method of Claim 103, wherein the cyclosiloxane monomer substituted with a hydrophile comprises a ring size of from about 6 to about 12 atoms.

116. The method of Claim 103, wherein the unsubstituted cyclosiloxane monomer comprises hexamethylcyclotrisiloxane.

117. The method of Claim 103, wherein the unsubstituted cyclosiloxane monomer comprises octamethlcyclotetrasiloxane.

118. The method of Claim 103, wherein the polysiloxane monomer terminated with a telechelic group comprises divinyltetramethyldisiloxane.

119. The method of Claim 103, wherein the polysiloxane monomer terminated with a telechelic group comprises vinyldimethylsilyl terminated polydimethylsiloxane.

120. The method of Claim 119, wherein the vinyldimethylsilyl terminated polydimethylsiloxane comprises an average molecular weight of from about 200 to 20,000.

121. The method of Claim 103, wherein the polymeric material comprises about 100 or more dimethylsiloxane repeating units.

122. The method of Claim 103, wherein the polymeric material comprises from about 100 to about 10000 dimethylsiloxane repeating units.

123. The method of Claim 103, wherein the polymeric material comprises one or more hydrophilically-substituted repeating units.

124. The method of Claim 103, wherein the polymeric material comprises from about 1 to about 10000 hydrophilically-substituted repeating units.

125. The method of Claim 103, wherein the polymeric material comprises one or more polyethylene glycol-substituted repeating units.

126. The method of Claim 103, wherein the polymeric material comprises from about 1 to about 10000 polyethylene glycol-substituted repeating units.

127. The method of claim 126, wherein the polyethyleneglycol comprises an average molecular weight of from about 200 to about 1200.

128. The method of Claim 103, wherein a number ratio of repeating units derived from cyclosiloxane monomer substituted with a hydrophile to repeating units derived from unsubstituted cyclosiloxane in the polymer is from about 1:200 to about 1:1.

129. The method of Claim 103, wherein a number ratio of repeating units derived from cyclosiloxane monomer substituted with a hydrophile to repeating units derived from unsubstituted cyclosiloxane in the polymer is from about 1:200 to about 1:2.

130. The method of Claim 103, wherein a number ratio of repeating units derived from cyclosiloxane monomer substituted with a hydrophile to repeating units derived from unsubstituted cyclosiloxane in the polymer is from about 1:200 to about 1:10.

131. The method of Claim 103, wherein the polymeric material comprises one or more ethylene glycol-substituted repeating units.

132. The method of Claim 103, wherein the polymeric material comprises one or more diethylene glycol-substituted repeating units.

133. The method of Claim 103, wherein the polymeric material comprises one or more triethylene glycol-substituted repeating units.

134. The method of Claim 103, wherein the polymeric material comprises one or more tetrathyleneglycol-substituted repeating units.